AGENCY OF ENVIRONMENTAL CONSERVATION

Department of Forests, Parks and Recreation

State of Vermont

HIGHLIGHTS
7- MAPS

FOREST INSECT AND DISEASE CONDITIONS
Calendar Year 1980

Prepared by Forest Resource Protection

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VERMONT
INSECT AND DISEASE HIGHLIGHTS
1980

Gypsy Moth, defoliation increased from 28,667 acres in 1979 to 41,327 acres in 1980. The largest area of defoliation was on 14,300 acres around Lake Dunmore in Addison County.

Forest Tent Caterpillar populations decreased in southern Vermont but increased dramatically in northern Vermont, defoliating 62,996 acres statewide, compared to 43,464 acres in 1979. Assistance was provided to 12 landowners in late May and early June for aerial control of the insect on 613 acres of sugarbushes in Franklin and Lamoille Counties.

Saddled Prominent levels remained high, defoliating 36,685 acres of hardwoods this year, compared to 39,340 acres in 1979. The outbreak appears to be spreading northward, with heavy defoliation observed for the first time in Orange County.

Scleroderris Canker has now been found in 93 plantations comprising about 750 acres. As a result of new infection centers, 6 towns were added to the quarantine area this fall.

Late Frost Damage occurred on over 124,507 acres of northern hardwoods at higher elevations, mostly over 2000 feet.

Larch Decline continues to increase, with 7,080 acres now known to contain tree mortality.

Birch Leaf Skeletonizer was detected for the first time causing noticeable defoliation of about 5,250 acres of white birch in Caledonia, Washington and Orange counties.

Larch Casebearer caused moderate to heavy defoliation in most eastern larch stands throughout the state. An estimated 50,000 acres of larch were defoliated.

Spruce Budworm damage continues to increase in northeastern Vermont, with defoliation on 110,715 acres of spruce-fir. About 27,000 acres are estimated to contain a high proportion of dead tops and/or trees compared to 11,000 acres estimated to be in this category in 1979. A mortality assessment survey is planned for Orleans County this fall.

Maple Leaf Cutter defoliation decreased statewide from 36,283 acres in 1979 to 24,772 acres in 1980. Populations appear to be decreasing in southern Vermont but rebounding in northern Vermont.

Hardwood Defoliators

Gypsy moth, Porthetria dispar populations increased this year following a very mild winter which resulted in excellent spring hatch of egg masses at all heights. A total of 41,327 acres were defoliated (Map 1) compared to 28,667 acres in 1979. Acreage receiving moderate to heavy defoliation in 1980 more than doubled over 1979 figures. The largest single area of defoliation occurred on 14,300 acres around Lake Dunmore in Addison County

1980 Gypsy Moth Defoliation By Counties vs. 1979 Defoliation

County	Light(30%)	Moderate(30-60%)	Heavy(60%)	Total
Rutland		6,502	1,409	7,911
Bennington		945	897	1,842
Windsor			52	52
Windham		2,133	112	2,245
Addison	3,307	15,667	1,662	20,636
Chittenden	4,021	2,949	512	7,482
Franklin	543	283	333	1,159
1980 Total	7,871	28,479	4,977	41,327
1979 Total	10,117	4,675	10,925	28,667

Gypsy moth populations are expected to increase in 1981 due to a large number of areas with young infestations in 1980 and numerous large egg masses present in most areas.

There were no large control projects for gypsy moth this year, though many landowners resorted to treatment with ground equipment around residences and vacation homes. Landowners in residential areas that were heavily defoliated this year are concerned about the insect and are interested in control in 1981.

Forest Tent Caterpillar, Malacosoma disstria, populations decreased in southern Vermont but increased dramatically in northern Vermont, defoliating 62,996 acres statewide compared to 43,464 acres in 1979. (Map 2) Lamoille County, with 15,300 acres defoliated, contained the greatest area of young infestations. Sugar maple and white ash were the two species most heavily defoliated.

1980 Forest Tent Caterpillar
Defoliation by County

County	Light(30%)	Moderate(30-60%)	Heavy(60%)	Total
Rutland		5,341	1,679	7,020
Windsor		1,879	1,775	3,654
Addison	211	2,265	1,325	3,801
Chittenden		611	6,931	7,542
Franklin	83	1,732	8,723	10,538
Lamoille	3,728	2,144	9,428	15,300
Orange	2,694	3,391		3,391
Washington	2,694	2,721	1,734	7,149
Caledonia		243	589	832
Orleans	467	2,777	525	3,769
Total	7,183	23,000	32,813	62,996

Assistance was provided to 12 landowners for aerial control of the insect in sugarbushes in Franklin and Lamoille counties. A total of 543 acres was treated with carbaryl (Sevin 80S) and 70 acres were treated with Bacillus thuringiensis (B.t.). Applications were made between May 28 and June 6 by small fixed-wing aircraft. The B.t. treatment to a 70 acre sugarbush in Fletcher was especially effective, using one evening application of Thuricide 16B at the recommended rate of 2 quarts per acre in 1 gallon of water.

Pupal parasitism was checked for 3 areas in Lamoille County receiving noticeable defoliation for the first time in 1980. Based on collections of 50 pupae from a lightly defoliated area and 100 pupae each from a moderate and a heavy area, percent parasitism was 45%, 22%, and 85%, respectively. Predictions for 1981 are for population increases in the newest infested areas, especially in Lamoille County, but with a statewide decrease in acreage affected. Many requests have been received from sugarbush owners, especially in Lamoille County, for assistance with forest tent caterpillar control in 1981, if needed. Egg mass surveys are planned for later this fall to determine which sugarbushes have populations sufficient to cause noticeable defoliation in 1981.

Refoliation of trees heavily defoliated by forest tent caterpillar was not as complete as usual. Presumably, a shortage of ground water following one of the driest winters on record and continued early summer drought conditions, prevented many new shoots from developing. Defoliated areas checked so far reveal many trees that were 70-90% defoliated and did not refoliate at all but trees 100% defoliated did refoliate to some extent, though complete refoliation was rare.

Maple Leaf Cutter, Paraclemensia acerifoliella, populations appear to be increasing in many areas of the state, although overall acreage detectable from the air decreased to 24,772 acres this year (Map 3) compared to 36,283 acres in 1979. Orange, Windsor, and Windham counties had the most defoliation with 9,976, 8,857, and 5,699 acres of moderate-heavy sugar maple defoliation, respectively. Crown dieback continues to occur in areas of repeated defoliation.

Saddled prominent, Heterocampa guttivata, defoliated 36,685 acres of hardwoods this year (Map 4), compared with 39,340 acres in 1979, the first year of noticeable defoliation. The outbreak spread northward into Orange County, which received the greatest amount of heavy defoliation.

1980 Saddled Prominent Defoliation by County

County	Light(30%)	Moderate(30-60%)	Heavy(60%)	Total
Rutland		800	1,259	2,059
Bennington	273	1,581	4,438	6,292
Windsor	585	1,517	7,665	9,767
Windham	1,060	1,017	4,142	6,219
Orange			11,598	11,598
Caledonia	200			200
Orleans	150			150
Total	2,268	4,915	29,102	36,285

Sugar maple and beech were the two species most heavily defoliated, especially the maple. Complete defoliation of these trees in the most northern areas (Orange Co.) occurred so late in the season (mid August) that no refoliation took place. In southern Vermont, defoliated sugar maples refoliated, although bud set did not occur. Bud swell was observed on birch and beech. Many areas in Windsor County experienced their second consecutive year of complete defoliation, with crown dieback and mortality of some ridgetop trees. Larvae in these areas were subjected to starvation, predation, and wilt disease, resulting in low pupal counts this fall.

Numerous larvae causing defoliation too light to be aerially detected were observed in nearly every county of the state, indicating the potential for an even larger infestation in 1981. Pupal counts in first-year-defoliated areas in Bennington and Windsor counties indicate that defoliation will occur in these areas again next year.

A maple webworm, tentatively identified as Tetralopha asperatella, was extremely common on sugar maple throughout the northern part of the state this year, causing light to moderate defoliation. The webworm was occasionally observed in the southern part of the state. This insect has never been abundant enough in the past to be noticed. This year, however, many maples, especially full-crowned maples in sugarbushes, were covered with skeletonized webbed leaves containing larvae of this insect. Larvae were present from August until leaf fall in October. T. asperatella was associated with maple blight in Wisconsin in 1957, where it was found to lay its eggs inside leaves rolled by several species of leafroller. The defoliation it caused in Wisconsin, combined with drought conditions resulted in much sugar maple decline and mortality. Here in Vermont, the insect was found associated with leaves rolled by Sparganothis pettitana as well as those folded by the maple trumpet skeletonizer, Epinotia aceriella. Both S. pettitana and C. aceriella have been very common on sugar maple during recent years, providing a niche for the buildup of maple webworm.

The damage caused by the webworm was especially noticeable when it occurred following moderate defoliation caused by S. pettitana or maple leaf cutter, or moderate to heavy defoliation caused by forest tent caterpillar. In the latter case, it was sometimes observed causing heavy late defoliation of what few leaves remained on the tree.

Maple Trumpet Skeletonizer, Epinotia aceriella populations increased in many areas of the state this year. The insect was often present on sugar maples defoliated by forest tent caterpillar, maple leaf cutter, Sparganothis pettitana and maple webworm.

A solitary leaf roller, Sparganothis pettitana, was again widely distributed this year. Damage to sugar maple was usually very light although noticeable defoliation occurred on 300 acres in Orleans County. The association of maple webworm with this insect may increase its importance in the future.

Birch Leaf Miner, Fenusa pusilla, damage to white and grey birch continues to be common throughout the state in ornamentals and forest trees. Stress due to repeated defoliation has caused some mortality.

Birch Leaf Skeletonizer, Buccalatrix canadensiella, was detected for the first time causing noticeable defoliation of white birch on about 5000 acres in Groton and Marshfield as well as on 160 acres in Newbury and 190 acres in Tunbridge, for a total of 5,250 acres of known damage.

Locust Leaf Miner, Xenochalepus dorsalis caused heavy defoliation in portions of Addison and Chittenden counties, and was observed throughout the range of locust.

Elm Leaf Beetle, Pyrrhalta luteola continued to cause heavy damage to elms in the Champlain Valley and Rutland County, with additional damage in Windsor and Lamoille counties. Damage was heaviest to roadside trees, and appeared to be compounded by water stress.

Spring Cankerworm, Paleacrita vernata, was occasionally seen in Addison County.

Mountain Ash Sawfly, Pristophora geniculata, caused scattered damage to native and ornamental trees throughout the state. Damage appears to be increasing in the mountainous areas of Addison County.

Satin Moth, Stilpnotia salicis, defoliation was a common complaint on ornamental poplars and cottonwoods throughout the state.

Eastern Tent Caterpillar, Malacosoma americanum populations appear to be decreasing in the northern part of the state, although levels remain high in the south. Up to 40 nests per tree were observed in an old field in Bennington County.

Uglynest Caterpillar, Archips cerasivoranus was observed on roadside cherry in widely scattered locations in the northern part of the state. The insect levels are down from 1979.

A looper, Phigalia titea was very abundant on oaks and associated hardwoods in Monkton again this year. Defoliation was light. The looper was occasionally observed in the southern part of the state.

A leaftier complex, in association with Phigalia titea, again caused moderate defoliation of oak in the Middlesex-Waterbury area, but this year the damage increased from 400 acres to 550 acres. The leaf tiers responsible are assumed to be the same species identified in 1979, namely Psilicorsis reflexella, Tetralopha sp., Telphusa quercinigraiella, and Morrisonia confusa, with P. reflexella being the most important.

Large Aspen Tortrix, Choristoneura conflictana, populations appear to be increasing in the Northeast Kingdom and Lamoille County. This insect was frequently detected on roadside aspen, and was responsible for moderate defoliation of 5 acres in Danville and 50 acres in St. Johnsbury.

Spiny Elm Caterpillar, Nymphalis antiopa, was observed occasionally.

Dogwood Sawfly, Macremphytus sp., caused severe defoliation of an ornamental dogwood in Windsor County. Control was achieved with Malathion.

Green Striped Mapleworm, Anisota rubicunda, was reported occasionally, often in association with saddled prominent infestations.

Fall Webworm, Hyphantria cunea, populations have collapsed in the north. Webs were occasionally observed along roadsides in the southern part of the state at lighter levels than previous years.

Orangehumped Mapleworm, Symmerista levcitys, was occasionally observed in association with saddled prominent infestations in the northern part of the state.

Japanese Beetle, Popillia japonica, was the subject of numerous complaints, causing damage to mountain ash and basswood.

Maple Petiole Borer, Caulocampus acericaulis was observed throughout the southern part of the state.

The following hardwood defoliators were not detected this year:

Fall Cankerworm, Alsophila pometaria
Bruce Spanworm , Operophtera bruceata
Green Fruitworm, Lithophane antennata

Softwood Defoliators

Spruce Budworm, Choristoneura famiferana damage continues to increase in northeastern Vermont. This year, defoliation occurred on 110,715 acres of spruce-fir in Essex, Orleans and Caledonia counties (Map 5), with 105,259 acres containing moderate to severe defoliation. Damage has steadily increased since 1976, with considerable fir mortality now beginning to show up, even on the better spruce-fir sites.

Spruce Budworm Defoliation in Vermont, 1976-1980

	Year				
	1976	1977	1978	1979	1980
Acres Defoliated	18,000	44,000	61,560	101,923	110,715

The infested area has not increased much during the past year, but the amount of damage occurring in the form of dead tops and dead trees has noticeably increased. 54,257 acres contain severe defoliation damage, with approximately half, or 27,000 acres containing a high proportion of dead tops and/or dead trees. This compares with 11,000 acres estimated to be in this category in 1979.

Spruce Budworm Defoliation in Vermont
By County and Defoliation Category-1980

County	Defoliation Damage		
	Light(30%)	Moderate(30-70%	Severe(70%)*
Essex	3,156	16,061	25,254
Orleans	1,743	25,391	21,685
Caledonia	557	9,550	7,318
Total	5,456	51,002	54,257

* approximately half this acreage contains dead tops and/or dead trees.

Towns containing the heaviest damage are Holland, Norton, Greensboro, Hardwick, Canaan, Sutton, Lyndon, and Burke. A mortality assessment survey is planned for Orleans County this fall as the first step in determining the extent of spruce budworm caused losses.

Budworm populations generally increased in 1980, based on 12 areas in various ownership surveyed in early 1980 to determine overwintering population levels. This was done using a laboratory "soak-out" method.

Spruce Budworm Population Levels Based on 1980 Overwintering Larvae vs. 1979 Overwintering or Summer Larvae

Town	Infestation Level 1980	1979
Canaan	High	High
Canaan	Extreme	Medium
Norton	Extreme	N.S.*
Norton	Extreme	High
Lemington	Extreme	N.S.
Brownington	Extreme	Medium
Morgan	Low	Low
Greensboro	Extreme	High
Greensboro	High	High
Burke	Extreme	Extreme
Sutton	Extreme	N.S.
Hardwick	Extreme	N.S.

* not sampled

Another 11 areas belonging to St. Regis Paper Company were surveyed for overwintering larvae by processing their samples. Results indicated that they had 1 area with extreme populations, 2 with high populations, 1 with medium populations and 7 with low populations. This represents an increas in budworm populations on their Vermont holdings. Overall, there are no indications that spruce budworm populations are likely to decrease in Vermont in the near future.

Despite the amount of damage taking place, only one landowner resorted to chemical control this year. His 50 acre lot in East Burke was aerially sprayed June 19 with carbaryl, resulting in good control. Most landowners are resorting to heavy removal of fir in budworm damaged stands.

Larch Casebearer, Coleophora laricella, was extremely heavy in nearly all eastern larch stands in the state this year, causing complete defoliation of many trees. A partial aerial survey in Essex County revealed 924 acres of moderate to heavy larch defoliation in Concord and Lunenburg alone. It is estimated that statewide about 50,000 acres of larch were defoliated.

Yellow-headed Spruce Sawfly, Pikonema alaskensis, defoliated ornamental spruce trees in scattered locations throughout the state.

Introduced Pine Sawfly, Diprion similis, was detected defoliating white pine in Milton.

Red-headed Pine Sawfly, Neodiprion lecontei, was observed defoliating occasional shade and roadside red pines in Chittenden, Franklin and Lamoille counties, and was associated with pine mortality in one Rutland County location.

European Pine Sawfly, Neodiprian sertifer, caused light damage to a red pine plantation in Bennington County.

Balsam Gall Midge, Paradiplosis tumifex, damage to balsam fir was variable this year, with reports of moderate to heavy damage in 2 Christmas tree plantations in Rutland County and 2 in Caledonia County. Populations appear to be increasing in many locations.

Arborvitae Leaf Miner, Argesthia thivella, defoliation of cedar was observed throughout the state and damage to ornamentals due to 1979 infestations was a frequent homeowner complaint.

Larch Sawfly, Pristophora erichsonii, was not observed this year.

Aphids and Scale Insects

Balsam Woolly Aphid, Adelges piceae, populations appear to be increasing in northern Vermont, especially in Orleans County, but estimated total area infested remains at 18,000 acres.

Spruce Gall Aphid, Adelges abietis, damage to Christmas trees in the Northeast Kingdom decreased to being a problem only on an occasional tree this year. Damage to ornamentals was common throughout the state.

Pine Bark Aphid, Pineus strobi appeared to be at high population levels this year, being very common on shade and forest white pines throughout the state. Heavy infestations were observed at the Moscow Seed Orchard as well as in an unthrifty young stand in Dorset. Damage from this aphid should be limited to a reduction in tree vigor.

Hickory Gall Aphid, Phylloxera caryaecaulis, was observed on hickories in Rutland County.

Balsam Twig Aphid, Mindarus abietinus, populations remain at low levels but appear to be increasing. Twig aphids could be found at trace to light levels in many Christmas tree plantations.

Oystershell Scale, Lepidosaphes ulmi, caused heavy damage to a 5 acre stand of nearly pure beech in Cambridge. Branch mortality and a general thinning of crowns was evident on the mature beech trees, while many understory trees have been killed. Greatly reducing the stocking level of beech with soil scarification to promote the establishment of yellow birch from nearby trees, was recommended.

Cottony Maple Scale, Puluinaria acericola, was observed on ornamental maples in Rutland County.

Bud, Shoot and Stem Insects

White Pine Weevil, Pissodes strobi, damage to white pine and spruce was considered to be stable at moderate levels in the north and heavier than last year in the south. It continues to be a serious problem of young white pine and white or Norway spruce stands. Landowner complaints on this insect have been especially frequent in Caledonia County.

Balsam Shootboring Sawfly, Pleroneura brunneicornis, caused tip browning of balsam fir in some Christmas tree plantations in northern Vermont. The insect was especially common in the Walden area but damage was light and was no more noticeable than in 1979.

Pine Shoot Borer, Eucosma gloriola, continues to cause scattered light shoot damage but was less noticeable this year than in the past.

Zimmerman Pine Moth, Dioryctria zimmermani and Pitch Twig Moth, Petrova comstockiana, were identified as being the cause of extensive stem and branch mortality in an unmanaged 150 acre Scotch pine plantation in North Ferrisburg.

Pales Weevil, Hylobius pales caused moderate to heavy damage to a Scotch pine Christmas tree plantation in Cornwall and light damage to one in Bristol.

Pine Spittlebug, Aphrophora parallela, caused light damage to a Scotch pine plantation in Rutland.

A meadow ant, Formica subsericea, was identified as causing the death of numerous balsam fir Christmas trees scattered throughout a 3 acre plantation in Lincoln.

Bark Beetles

Eastern Larch Beetle, Dendroctonus simplex, continues to be found in association with Larch Decline on 6980 acres. Beetle populations build up in dead and dying trees and then spread outward killing more trees.

FOREST DISEASES

Beech Bark Disease, caused by Cryptococcus fagi and Nectria coccinea var. faginata, continues to cause beech mortality throughout the state. Mortality rates appear to be stable or decreasing but populations of the scale insect appear to have increased this year in many locations.

White Pine Blister Rust, caused by Cronartium ribicola, appears to be killing white pines at fairly stable low levels in the north but increasing in the south. Most infections observed in northern Vermont are older ones that occurred about

10 years ago, but a few recent infections have been noticed. Landowner calls concerning this disease are on the increase and 20 acres in Wheelock were protected through Ribes eradication this summer at the owner's request. Ribes plants were more frequently noticed in some northern locations than in the past, indicating a possible future increase in infection.

Dutch Elm Disease, caused by Ceratocystis ulmi, was more evident this year than in the past. More young trees in some northern locations appeared to have died from the disease than usual, perhaps due to drought conditions in the early part of the growing season. The town of Woodstock has been successful in slowing down the rate of infection by combining sanitation with preventative systemic fungicide injections.

Cytospora Canker, caused by Cytospora kunzei, remains common on ornamental white and blue spruces.

Hypoxylon Canker, caused by Hypoxylon prvinatum, remains widespread and damaging, especially in young open-grown stands.

Verticillium Wilt, caused by Verticillium albo-atrum, was observed in Windsor County.

Sapstreak of maple, caused by Ceratocystis coerulescens, was suspected in the rapid death of two sugar maples in Washington County (Plainfield) but this could not be confirmed by an attempt to culture the fungus. Two other sugar maples, one in Chittenden County (Essex) and one in Windham County, were suspected of being killed by this disease.

Balsam Fir Canker, identity unknown, was found responsible for killing the top 4 to 8 foot section of mature ornamental fir trees in scattered localities, especially in Orleans and Caledonia counties. The infection on recently discovered trees dates back to 1979 when the problem was first noticed.

Scleroderris Canker caused by Gremmeniella abietina, continues to be found in new locations throughout northern Vermont but has yet to be found south of Ripton despite an ongoing survey of red and Scotch pine plantations in Bennington County. To date, 93 plantations comprising about 750 acres have been found to be infected. Surveys conducted just outside the 1979 quarantine boundaries by two inspectors employed by the USDA, Animal, Plant and Health Inspection Service accounted for most of the 23 new infection centers discovered in 1980.

As a result of these new infection centers, 6 new towns were added to the state quarantine area (Map 6) this year. These towns bordered on the eastern and southern edges of the 1979 quarantine area.

The impact of Scleroderris canker on host trees in Vermont remains minimal. Tree mortality has occurred on only one of the sites discovered to be infected in 1980 and this was a one acre planting of neglected scotch pine in Newark. A total of 8 plantations on 40 acres are presently known to contain tree mortality due to G. abietina. Four Christmas tree plantations were quarantined for the first time this year because of G. abietina infection on red pine within or adjacent to

the plantations. All trees removed from these plantations must be sold within the state quarantine area. Many of the quarantined trees are spruces which are low in susceptibility to the disease but are still capable of transmitting it. Removal of the highly susceptible red and scotch pine from Christmas tree plantations containing other regulated species is recommended in these situations.

Red Ring Rot, caused by Phellinus pini, occurs on overstocked, mature white pine and larch throughout the south.

Woodgate Gall Rust, caused by Endocronastium harknessii, has been observed on Scots pine in Rutland and Windsor Counties.

Black Knot, caused by Dibotryon morbosum, is widespread and was seen disfiguring every stem in a stand of off-site cherry in Rutland County (Shrewsbury).

Tip Blight, caused by Diploidea pinea, was seen on ornamental red pine in Rutland County.

Crown Gall, caused by Agrobacterium tumefaciens, was observed occasionally, causing heavy damage to roadside trees in Rutland County.

Foliage Diseases

Fir-Fern Rust of balsam fir, caused principally by Uredinopsis mirabilis, caused heavy defoliation of some balsam fir Christmas trees in scattered locations throughout northern Vermont as well as in Rutland County but overall damage appears to be much lighter than in 1979.

Lophodermium Needle Cast, caused by Lophodermium pinastri was observed on Scotch pine Christmas trees in scattered locations but the only heavy damage reported was to a plantation in Poultney.

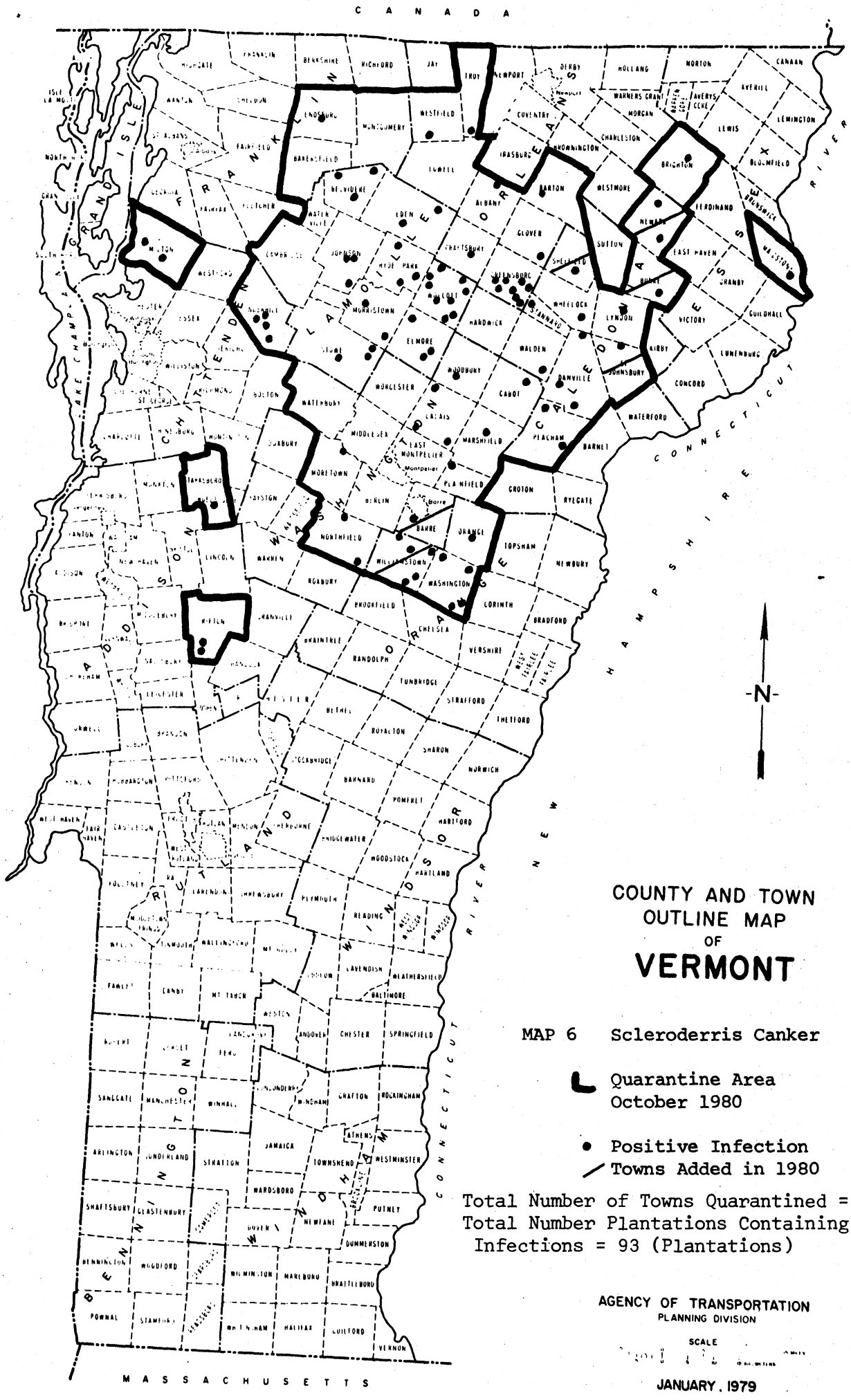
Naemacyclus Needle Cast, caused by Naemacyclus nivius was observed on Scotch pine in Addison County.

Root Rots

Shoestring Root Rot, caused by Armillariella mellea, was frequently observed in association with declining sugar maple statewide. It was associated with declining trees in southern Vermont following defoliation by maple leaf cutter or saddled prominent, It was also associated with pine mortality in Windsor County.

Annosus Root Rot, caused by Fomitopsis annosa, continues to spread in known infected plantations. One new infection center was discovered in Middletown.

Ganoderma Root Rot, caused by Ganoderma lucidum, was associated with mortality of urban maples in Rutland County.



COUNTY AND TOWN OUTLINE MAP OF VERMONT

MAP 6 Scleroderris Canker

Quarantine Area October 1980

• Positive Infection

/ Towns Added in 1980

Total Number of Towns Quarantined = 55 (Towns)
Total Number Plantations Containing Infections = 93 (Plantations)

AGENCY OF TRANSPORTATION
PLANNING DIVISION

SCALE

JANUARY, 1979

Diebacks, Declines, and Environmental Diseases

Late Frost Damage to northern hardwoods caused by hard frosts in early June, was extensive throughout the state. A total of 124,507 acres were mapped as having noticeable damage but this is an underestimate of actual acreage since not all areas of frost damage were mapped from the air. Essex and Orleans counties contained the most damage with 33,253 and 29,742 acres, respectively. Most of the damage occurred at elevations over 2000 feet, with damage as low as 1400 feet in the Northeast Kingdom but none below 2300 feet in the southern 4 counties. Sugar maple and beech were the two species most severely affected. Although some refoliation did occur, in most cases the frost left a small mid-portion of the leaves undamaged and they were not able to refoliate. Frost-damaged trees checked in northern Vermont failed to produce any new growth this year but did set buds for next year. Dieback resulting from bud mortality is anticipated.

Larch Decline and mortality was noticeable on 7080 acres this year compared to 3941 acres in 1979. This increase is due mainly to a tripling of affected acreage in Caledonia, Orleans, Washington, and Orange counties. Heavy populations of the eastern larch beetle, Dendroctonus simplex, continue to be associated with the decline. Also, heavy infestations of larch casebearer this year combined with subnormal precipitation during the first half of the year are expected to contribute to the problem next year.

Ash Dieback continues to be widespread and common in Bennington, Rutland, Windham, and Windsor counties.

Paper Birch Dieback was observed in a recently logged area in Arlington. Similar damage was noticed throughout southern Vermont as a result of birch leaf miner defoliation.

Red Spruce Decline continues to be a problem in scattered northern locations. One overstocked 70 acre stand on a good site in Elmore was discovered to have numerous pockets of almost complete spruce mortality. Shoestring root rot caused by Armillariella mellea was associated with declining trees, as was red root and butt rot caused by Polyporus tomentosus and red heartrot caused by Fomes pini. Soils in areas of greatest mortality had a much higher sand content than soils in areas of least mortality, indicating that water stress may be involved in the decline.

Vaseline applied in a band around tree trunks to control gypsy moth caused mortality of some ornamental trees.

Maple Decline continues to occur throughout the state. The syndrome is most common on shallow or compacted soils, and along roads.

Nemathodes

The Pine Wood Nematode, Bursaphelenchus lignicolis, was found associated with death of about 150 Scotch pine on a 10 acre red pine-Scotch pine plantation in Milton. The nematode was discovered and isolated by Dr. Dale Bergdahl, forest pathologist at UVM. A sandy site and drought conditions may be a contributing

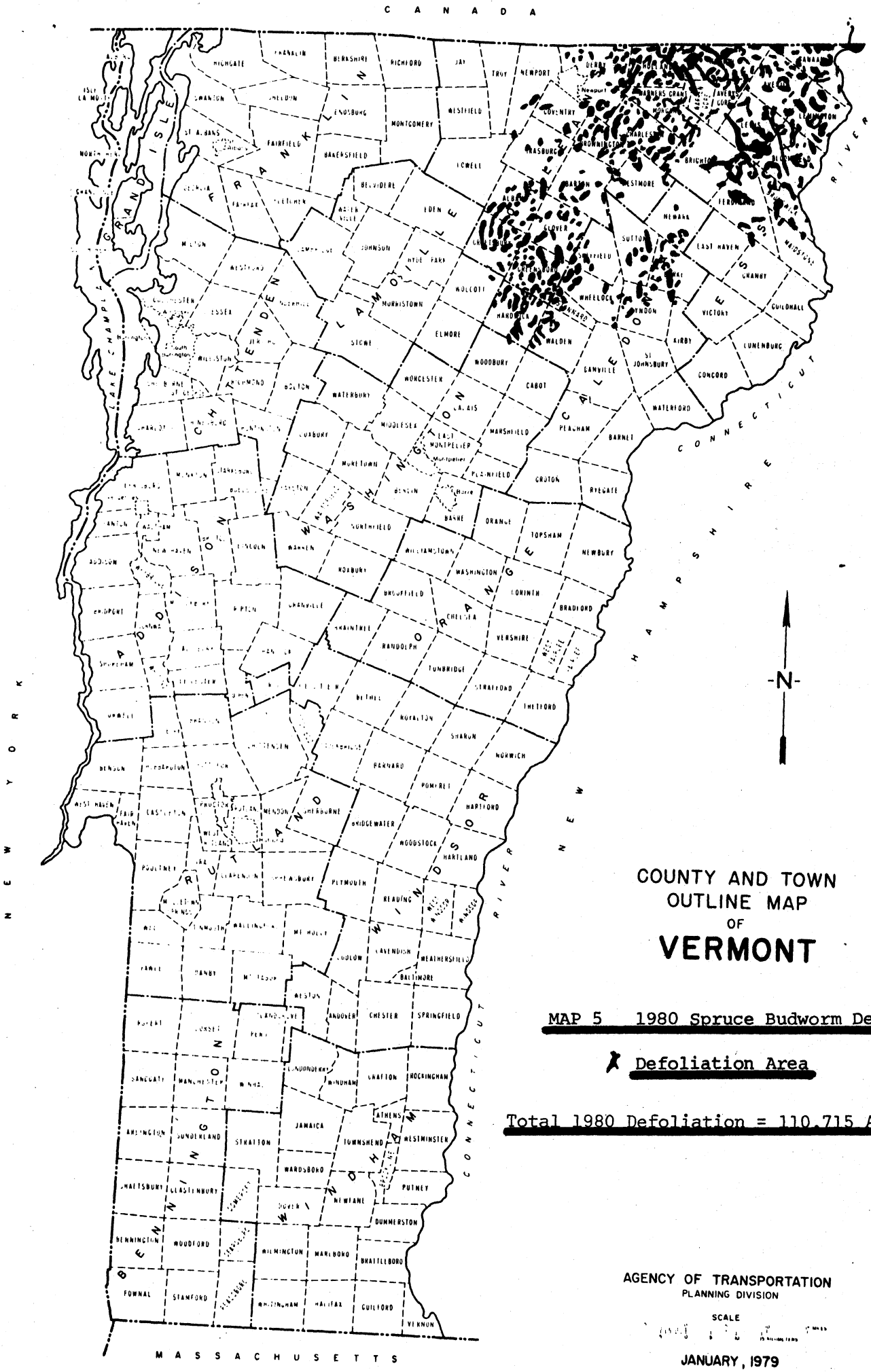
factor in the death of the trees.

Animals

Porcupines remain at low levels, with some increase in populations noticed. Control measures were hampered this year by the lack of snow.

Squirrels were responsible for some maple tubing damage throughout Addison County during the spring.

Mouse damage occurred in one Christmas tree plantation in Rutland County.



COUNTY AND TOWN OUTLINE MAP OF VERMONT

MAP 5 1980 Spruce Budworm Defoliation

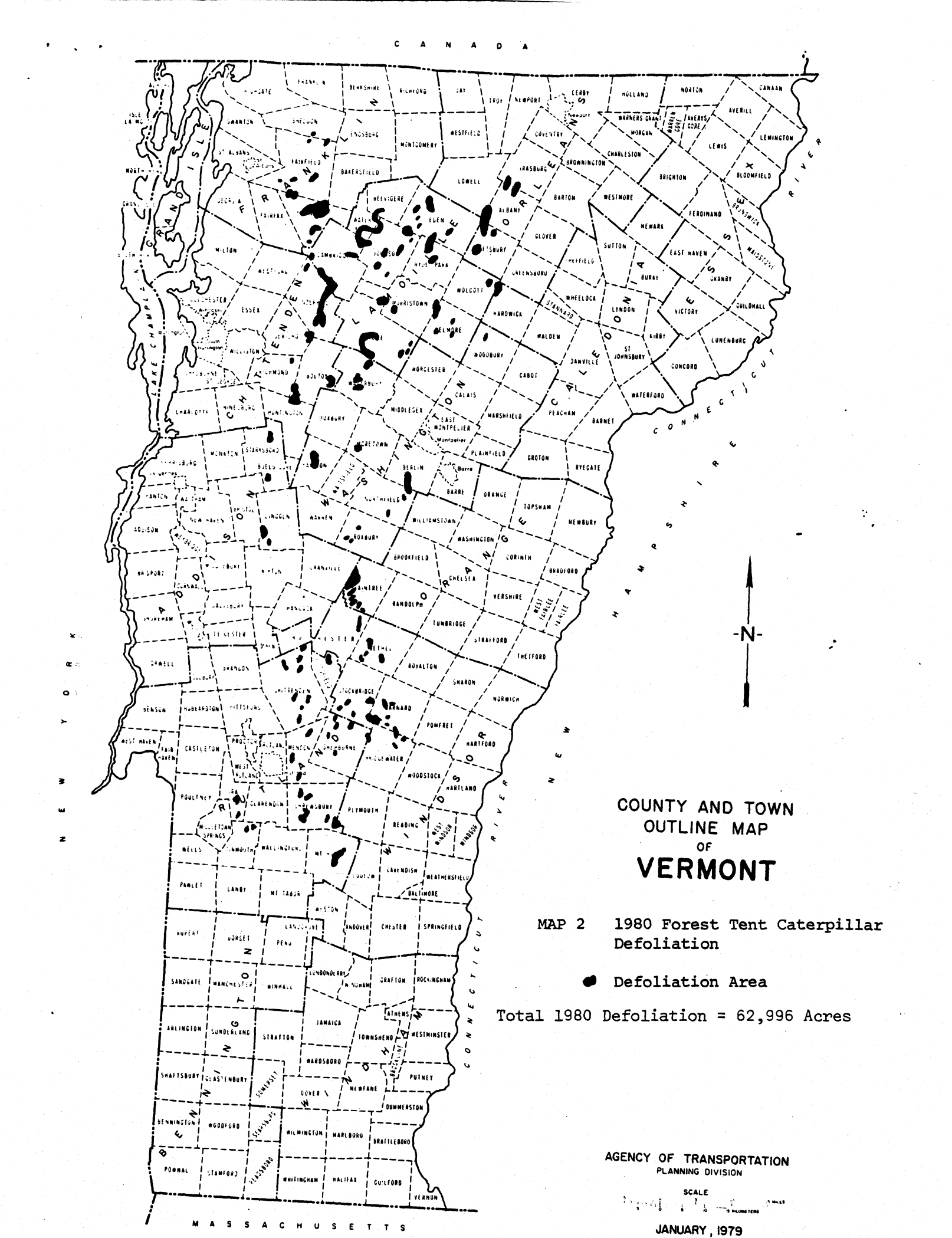
Defoliation Area

Total 1980 Defoliation = 110,715 Acres

AGENCY OF TRANSPORTATION
PLANNING DIVISION

SCALE

JANUARY, 1979



COUNTY AND TOWN OUTLINE MAP OF VERMONT

MAP 2 1980 Forest Tent Caterpillar Defoliation

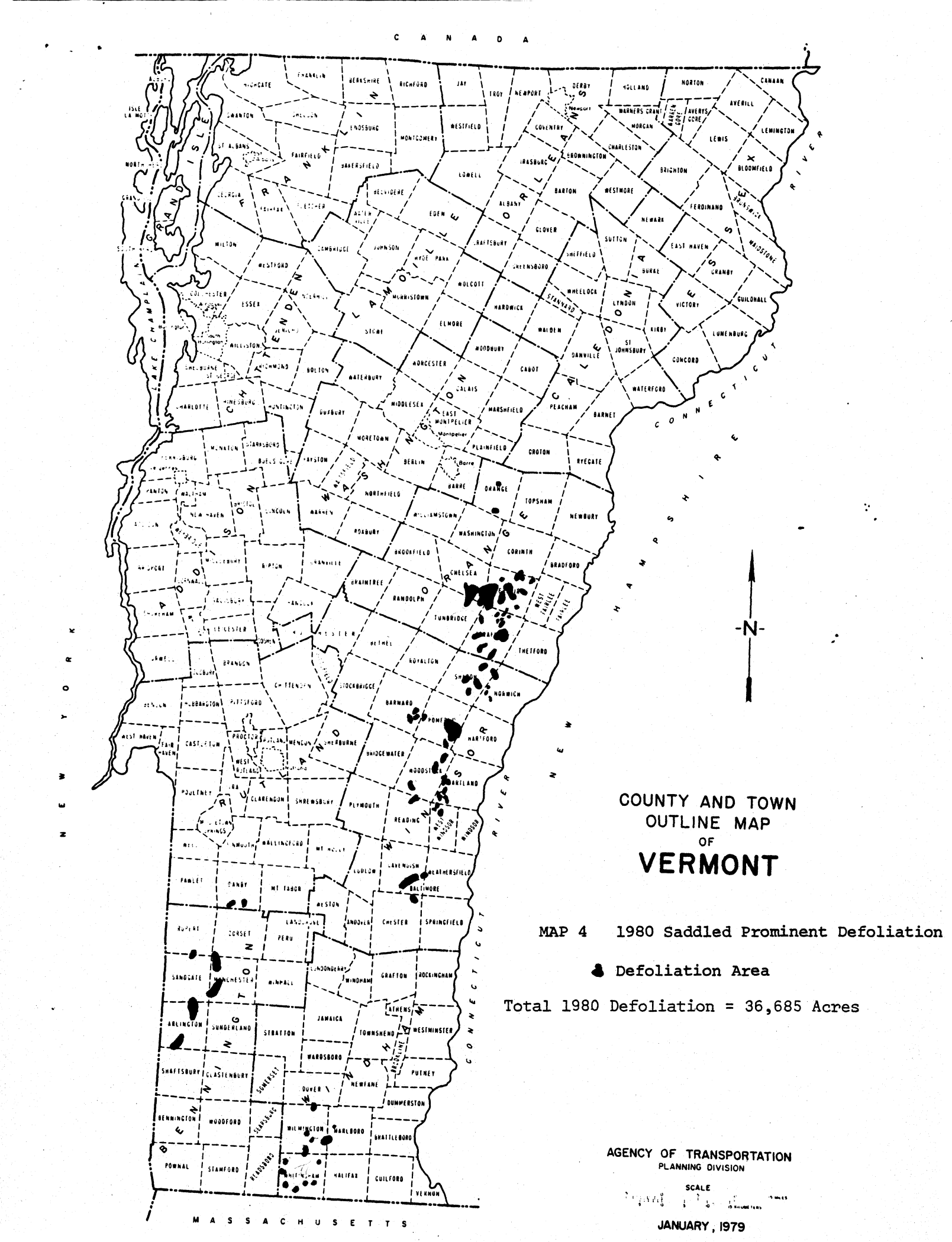
● Defoliation Area

Total 1980 Defoliation = 62,996 Acres

AGENCY OF TRANSPORTATION
PLANNING DIVISION

SCALE

JANUARY, 1979



COUNTY AND TOWN OUTLINE MAP OF VERMONT

MAP 4 1980 Saddled Prominent Defoliation

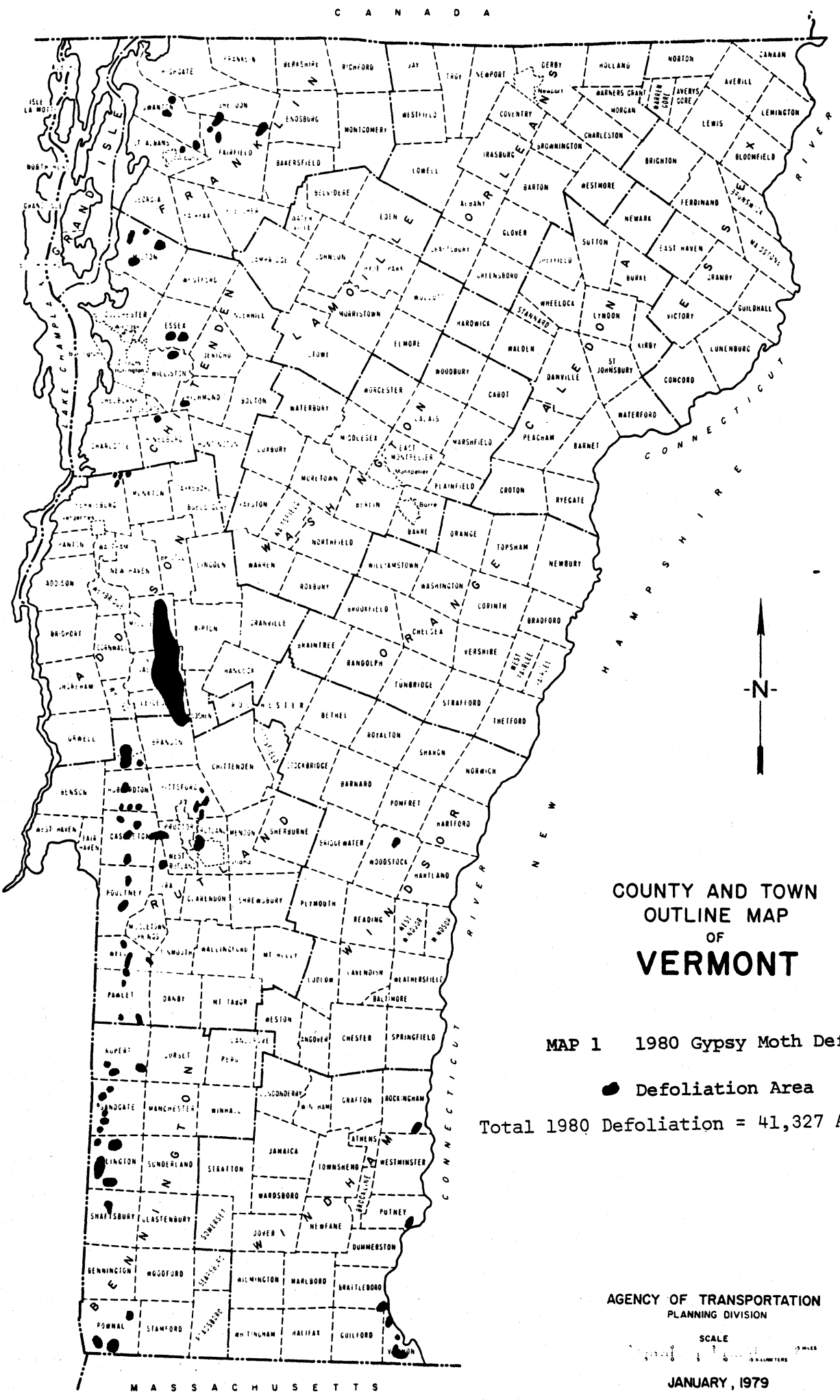
Defoliation Area

Total 1980 Defoliation = 36,685 Acres

AGENCY OF TRANSPORTATION
PLANNING DIVISION

SCALE

JANUARY, 1979



COUNTY AND TOWN OUTLINE MAP OF VERMONT

MAP 1 1980 Gypsy Moth Defoliation

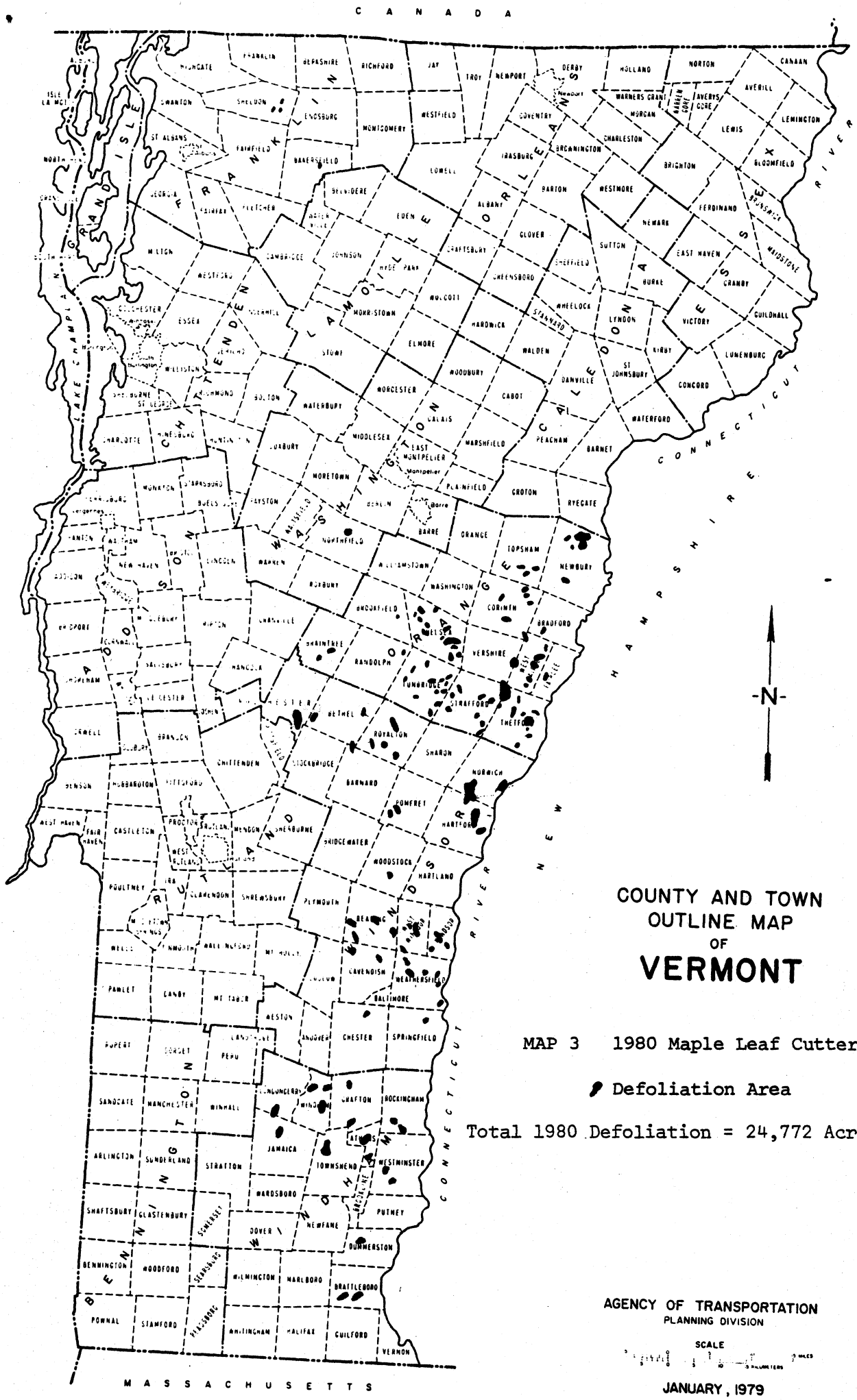
● Defoliation Area

Total 1980 Defoliation = 41,327 Acres

AGENCY OF TRANSPORTATION
PLANNING DIVISION

SCALE

JANUARY, 1979



COUNTY AND TOWN OUTLINE MAP OF VERMONT

MAP 3 1980 Maple Leaf Cutter Defoliation

Defoliation Area

Total 1980 Defoliation = 24,772 Acres

AGENCY OF TRANSPORTATION
PLANNING DIVISION

SCALE

JANUARY, 1979